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Angular Studies of Xenon Rydberg Atom Ionization at Au(111) Surfaces[1] H.R. DUNHAM, D.D. NEUFELD, J.C. LANCASTER, Rice University, S. WETHEKAM, Universität zu Berlin, F.B. DUNNING, Rice University — The ionization of xenon atoms excited to the lowest states in the $n = 17$ and $n = 20$ Stark manifolds at a flat Au(111) surface is being examined over a range of incident angles. The data suggest that, despite the strong perturbations in the energies and structure of the atomic states that occur as the surface is approached, the experimental data can be well fit by assuming that the ionization rate on average increases exponentially as the surface is approached. Under appropriate conditions, each incident atom can be detected as an ion and the inferred mean ionization distances are in reasonable agreement with theoretical predictions.

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